The Great Training Robbery

Judah Katznelson, Research Psychologist
U.S. Army Research Institute for the Behavioral and Social Sciences
Alexandria, Virginia 22333

Abstract

Employee selection and training constitute the major methods available to an organization for improving the ability of the work force. In large part the major objective for both activities is identical, although they achieve this purpose quite differently. Selection seeks to enhance ability levels through a process of elimination. Selection procedures enable an organization to hire a greater proportion of high-ability employees than would otherwise be possible. Training, alternatively, seeks to achieve the objective by increasing the ability levels of the existing work force.

There are several reasons why most organizations will engage in both selection and training, even though the objective of the two is identical. For example, it is generally very difficult to achieve a highly skilled work force using just one of the procedures. All DoD elements use both procedures. However, by not going one step further and training employees to enable them to approach their jobs from a common organizational frame of reference, the organization has, in effect, robbed itself of valuable personnel and training resources. To prevent this, an innovative approach to training has enabled two DoD human factors organizations to increase their return for the training dollar and avoid the great training robbery.

No scene from prehistoric times is quite so vivid as that of the struggles of great beasts in the tar pits. In the mind's eye one sees dinosaurs, mammoths and sabretoothed tigers struggling against the grip of the tar. The fiercer the struggle, the more entangling the tar and no beast is so strong or so skillful, but that he ultimately sinks.

Training over the past years has been such a tar pit and many great and powerful beasts have thrashed violently in it. Many training approaches have emerged with working programs but few have met fully the goals and expectations. Large and small, massive and puny, approach after approach has become entangled in the tar. No one thing seems to cause the difficulty - any particular paw can be pulled away. But the accumulation of simultaneous and interacting factors brings slower and slower motion. Everyone seems to be surprised by the stickiness of the problem and it is hard to discern the nature of it. But we must try to understand the nature of it if we are to solve it.

This paper has three objectives. First, we will describe some basic dimensions of ability, focusing on differences in ability both within and between people. Second will be a description of how an organization can

attempt to match the abilities of its employees with the ability requirements of its jobs. Finally attention is given to how an organization can attempt to upgrade the ability levels of its work force through its selection and training procedures.

We are all aware that group differences in physiological and psychological factors exist. What is often not so well known is that differences between individuals are generally much greater than differences between groups. Thus, knowing only one's group affiliation often tells us little about the individual even though we know the average performance of the group.

There are two types of individual differences that we must consider, interindividual and intraindividual differences. Interindividual differences pertain to differences between people - for example, differences in weight, intelligence and vision. On virtually every physical and psychological dimension, people demonstrate great variability.

Interestingly, however, the patterns of variability found among individuals on different characteristics tends to be quite similar. Specifically, the majority of persons tend to be arranged close to average on the characteristic, while relatively few people tend to be extremely high or low. If we were to take measurements on some characteristic from a fairly large number of persons, the frequency distribution would often appear as the classical bell-shaped curve.

These general observations should suggest to us something of the type of finding to be expected if we were to analyze the performance of a group of employees. If the distribution on some measure of performance varies markedly from the bell-shaped curve, caution is in order. Suppose, for example, that almost all of the employees are rated as high performers. In that case we might suspect that (1) the organization has been enormously successful in eliminating, through selection and/or training, the individual differences to be expected, or (2) bias has crept into the measurement system. The latter is frequently probable.

In contrast, intraindividual differences occur within individuals and have to do with the relationship between two or more characteristics. For example, if we know that an individual is high in verbal ability, can we also assume that he is high in numerical reasoning ability? In general, the answer to questions of this sort is no. Although positive relationships do exist between certain characteristics within individuals, these relationships tend to be low.

Again, the implications for measuring performance are fairly obvious. We would expect little relationship between various performance subcomponents of an individual being observed. Someone who is a conscientious performer, for example, may have only average human relations skills and be quite unknowledgeable about the task. A high degree of correspondence between measured subcomponents taken on the same individual should make us suspicious of the process we are employing to get those measures.

In an organizational context, it is of little value to view the abilities we have been discussing in some absolute sense. We cannot say, for example, that an individual possessing third grade language capabilities is adequate or inadequate without additional knowledge about the job he is to perform. If the job requires only an ability to write one's name and read very simple instructions, the individual's language capabilities may be adequate. Indeed, evidence suggests that individuals with capabilities exceeding the requirements of the job may perform as inadequately as those who do not possess the requisite skills.

We think in terms of matching a person to the job he is to perform. Such a matching process, in turn, requires that we be able to measure the abilities of the individual and the ability requirements of the job. Individual abilities to perform on the job are often measured by performance appraisals designed to identify various traits or characteristics of workers. However, appraisal systems having worker's traits as their major focus have generally not been very satisfactory. This results partly from the difficulty of assessing individual traits by a procedure which requires one person to observe another. It is also partly a system fault - that is, the traits measured in many appraisal systems bear little obvious relation to successful performance of the task.

An alternative appraisal procedure which has gained increasing acceptance focuses on the behaviors rather than on the traits of an employee. Through the use of critical incidents and related techniques, efforts are made to identify behaviors which are closely related to either successful or unsuccessful task performance. Although more will be said of these procedures later, we wish to point out here that behaviors appear easier to observe than ability traits per se. Thus, successful performance appraisal systems are likely to measure behaviors which are one step removed from the direct measurement of abilities.

In the preceeding paragraphs ability was defined, the nature of individual differences in ability were identified, and the need to match individuals to tasks in terms of the abilities required was discussed. Now the focus turns to methods an organization has at its command to manipulate individual ability so that a congruent person-job match may be obtained. Our discussion will deal with two general procedures that exist, employee selection and employee training, or development.

A major way in which organizations attempt to manipulate the ability levels of their work force is through employee selection. The core problem of selection involves the identification of appropriate ability levels among job applicants. Appropriate ability is normally defined in terms of the types of skills required for successful performance of some task.

Thus, selection can be thought of as being concerned with the identification (prediction) of successful task performers prior to their employment and can be achieved by the use of one or more predictors (e.g., tests, interviews) to assess the probable future organizational success of job applicants.

Suppose, for example, that a group of sales aspirants applying to an organization are given a short general aptitude test and an interest inventory which measures preferences for various types of careers. After a sufficient time had elapsed, their ability to perform the job would be examined. The examination might take the form of a supervisory performance evaluation of each employee. This evaluation and the results from the two tests would then be compared. Suppose that this comparison showed that: (1) individuals preferring business and related careers on the interest inventory generally received higher evaluations than persons preferring nonbusiness-related careers, and (2) there was no relationship between aptitude test scores and supervisory evaluations.

The results obtained above could subsequently be used to assist in the selection of new employees. Specifically, future job applicants should be given the interest inventory, but not the aptitude test, since the latter showed no relation to job success. Efforts should be made to hire those applicants who indicate business and related career preferences on the interest inventory. This hiring procedure should result in the employment of a larger proportion of individuals who will contribute to the goals of an organization than would otherwise be the case.

The accuracy of the statement above depends on three important assumptions that require brief elaboration. First, for any selection procedure to be useful there must be more applicants than there are jobs. This is necessary so that the organization can choose among the applicants, accepting the "best" and rejecting the "poorest." In the illustration, this would consist of accepting individuals showing business and related career preferences on the interest inventory.

Second, we must assume that the conditions prevailing when the predictors were initially validated apply when they are used to make selection decisions. If they do not, the predictor-performance relationships observed in the validation study may inadequately describe the relationships under the changed conditions. We must assume, for example, that job applicants as a group remain essentially the same over time. This is likely to be a tenuous assumption if the job market fluctuates markedly. Additionally, we must assume that the content of the jobs involved remains stable over time. This, too, is a tenuous assumption in a technologically innovative organization.

The only certain test for the second assumption is a continual revalidating of our predictor instruments through time. We may expect to find some shifting about in the contribution of various predictors to successful selection. It should also be obvious from this discussion that the utilization of a predictor in our organization simply because it has demonstrated validity in some other organization is unwarranted. We cannot safely assume that the predictor-performance relationship will generalize to our situation no matter how similar the tasks and job applicants appear.

The final assumption is in some respects the most important. We must assume that the measure of job performance, in the illustration - a supervisory evaluation, "gets at" what we regard as important for the

success of our organization. For example, do differences in evaluations reflect real performance differences, or do they instead merely reflect supervisors' preferences for various employees? For the purposes of this paper, let it suffice to say that employee selection constitutes one important personnel activity where adequate performance appraisal is crucial.

Training, or development, of employees is the second major method an organization employs to manipulate the ability levels of its work force. Training frequently involves new employees, but may also include existing workers whose skills are deemed insufficient for their current job or for a job to which they are promoted.

Like selection, training can be viewed as a process for manipulating skill levels. As such, training may be thought of as involving:

1. Identification of the skills to be learned through training;
2. Identification of participants to receive the training;
3. Development or selection of procedures which enable participants to learn efficiently the required skills;
4. Appraisal of the training procedures' effectiveness.

Once identifying what skills are to be learned, we can turn to an identification of the persons who would benefit from learning them. With new employees, everyone in the group may reasonably be included. This is particularly appropriate when the skills to be learned are relatively unique to the organization under consideration.

Bass And Vaughan (1966) suggest that any training technique be judged by how well it conforms to the findings from learning theory. As such, they suggest that an appropriate training procedure (pg. 86):

1. Provide for the learner's active participation;
2. Provide the trainee with knowledge of results about his attempts to improve;
3. Promote by means of good organization a meaningful integration of learning experiences that the trainee can transfer from training to the job;
4. Provide some means for the trainee to be reinforced for appropriate behavior;
5. Provide for practice and repetition when needed;
6. Motivate the trainee to improve his own performance;
7. Assist the trainee in his willingness to change.

An example of how this procedure was utilized can be seen from the efforts of two DoD human factors organizations: the US Army Human Engineering Laboratory, and the US Navy's Human Engineering Branch of the Pacific Missile Test Center.

These organizations faced a common personnel problem. Both groups hired people with various educational backgrounds. Not only did the

educational accomplishments of the employees range from college to the post-graduate level, but the expertise ranged across various fields such as psychology, anthropometry, engineering and computer science. Like most organizations, these DoD components engaged in both selection and training to meet their personnel needs.

Because the Army and Navy are increasingly pleased with the success of self-paced, interactive instruction and programmed instruction texts, they collaborated on a computer-based training course that combined modern training procedures with an approach that allows the accomplishment of the seven steps mentioned above. Additionally, by recognizing and addressing the need to provide their people with a common technical frame of reference among human factors specialists - wherever they may be employed - these organizations have increased their return for the training dollar. By using this additional step, they have avoided the great training robbery that so often inhibits the potential for the maximum payoff of valuable personnel and training resources.

In conclusion, the most suitable evaluation from an organization's point of view will be direct evidence about employee performance. The basic question is, has the performance of the participants benefited from the training program. Thus in training, as in selection, the ultimate value can be determined only after employees' contributions to organizational objectives can be properly assessed and success can be realized when innovative approaches are used to increase the efficiency of good training and selection procedures.